

REMARKS

This is in full and timely response to the final Office Action mailed June 23, 2003 and the Advisory Action mailed October 9, 2003, submitted concurrently with a Petition for a 2 month extension of time. Entry of this Amendment is proper under 37 C.F.R. §1.116 since the amendment: (a) places the application in condition for allowance (for the reasons discussed herein); (b) does not raise any new issues requiring further search and/or consideration; (c) satisfies a requirement of form asserted in the previous Office Action; and (d) places the application in better form for appeal, should an appeal be necessary. The amendment is necessary and was not earlier presented because it is made to correct a typographical error. Entry of this amendment is respectfully requested. Reexamination and reconsideration in light of the above amendments and the following remarks is respectfully requested.

Applicants want to thank SPE Patrick Ryan for the courtesies extended during the October 15, 2003 telephone discussion. Claim 1 and the corresponding portion of the specification were amended to more clearly recite the translation from the priority document.

Applicants' retrieved the computer translation of the priority document from the Japanese Patent Office web site. Paragraph 12 was translated as:

[0012] invention which invention concerning a claim 2 requires for a claim 1 -- it is - the [the 1st and] -- 2 electrolyte layers 16a and 16b -- La1-a Aa Ga1-(b+c) Bb Coc O3 it constitutes from material shown, respectively -- having -- the [and] -- or [that the **cobalt addition of 1 electrolyte layer 16a is zero**] -- the [or] -- it is the solid-acid ghost type fuel cell which is **80% or less of the cobalt addition of 2 electrolyte layer 16** However, for the inside A of a formula, it is one sort or two sorts or more of elements of Sr, calcium, and Ba, B is one sort or two sorts or more of elements of Mg, aluminum, and In, a is 0.05-0.3, b is 0-0.3, c is 0-0.2, and (b+c) is 0.025-0.3. As shown in drawing 2, it is the ion transference number of a lanthanum gallate system oxide. (ionicity conduction occupied to electric conduction comparatively) It changes especially with c value, and if c value is low, the ion transference number will improve. On the other hand, if c value is large by the upper formula, although conductivity is high, the ion transference number becomes low. In invention concerning this claim 2, 1st electrolyte layer 16a with the high ion transference number is obtained comparatively easily and certainly as compared with 2nd electrolyte layer 16b by making the **cobalt addition of 1st electrolyte layer 16a smaller than the cobalt addition of 2nd electrolyte layer 16b**. (Emphasis added)

Likewise, claim 2 of the priority document was translated as:

[Claim 2] the [the 1st and] -- 2 electrolyte layers (16a, 16b) -- $\text{La}_{1-a}\text{AaGa}_{1-(b+c)}\text{BbCoO}_3$ it constitutes from material shown, respectively -- having -- the [and] -- or [**that the cobalt addition of 1 electrolyte layer (16a) is zero**] -- the [or] -- solid-acid ghost type fuel cell according to claim 1 which is **80% or less of the cobalt addition of 2 electrolyte layers (16b)** However, for one sort of Mg, aluminum, and In or two sorts or more, and a, 0.05 to 0.3 and b are [the inside A of a formula / one sort of Sr, calcium, and Ba or two sorts or more, and B / zero to 0.2 and (b+c of zero to 0.3 and c)] 0.025-0.3. (Emphasis added)

As you can see this computer translation is difficult to interpret with respect to the percentage amounts of cobalt in the first electrolyte compared to the second electrolyte.

The English language abstract recites, in the last sentence:

Each electrolyte layer is made of a material as expressed by the formula, $\text{La}_{1-a}\text{AaGa}_{1-(b+c)}\text{BbCoO}_3$, and **the added quantity of cobalt of the first electrolyte layer is smaller than the added quantity of cobalt of the second electrolyte layer**, and the thickness of the first electrolyte layer is 1 to 20% of the solid electrolyte layer.

Upon review of the original Japanese, applicants believe that the amount of cobalt in the first electrolyte layer can be translated as $0\% \leq \text{Co} \leq 80\%$ with respect to the amount of cobalt in the second electrolyte layer.

Accordingly, applicants have amended claim 1, and the appropriate portion of the specification, to reflect this translation.

Rejections under 35 U.S.C. §103

Claims 1 and 3-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,287,716 to Hashimoto et al. Applicants respectfully traverse this rejection.

Hashimoto et al. '716 is not a proper §102(e)/103 reference because Hashimoto et al. '716 has the same assignee as this Application.

The MPEP at 2136.01 states:

For applications filed on or after November 29, 1999, a provisional rejection under 35 U.S.C. 102(e)/103 is not proper if the application contains evidence that the application and the prior art reference were

owned by the same person, or subject to an obligation of assignment to the same person, at the time the invention was made.

Similarly, MPEP §2136.02 states that

For applications filed on or after November 29, 1999, if the applicant provides evidence that the application and the prior art reference were owned by the same person, or subject to an obligation of assignment to the same person, at the time the invention was made, any rejections under 35 U.S.C. 102(e)/103 based upon such a commonly owned reference should not be made or maintained.

Evidence required to establish common ownership by the applicant is discussed in MPEP §706.02(1)(2), which states that a statement can be made by an attorney of record, and that the statement concerning common ownership should be clear and conspicuous, for example, on a separate piece of paper or in a separately labeled section. Furthermore, Applicant may, but is not required to, submit further evidence, such as assignment records.

As discussed above, §1.131 or §1.132 affidavits are inappropriate to overcome this rejection.

Statement of Common Ownership

Application 09/891,501, filed June 27, 2001, and U.S. Patent No. 6,287,716 to Hashimoto et al., were, at the time the invention of Application 09/891,501 was made, owned by Mitsubishi Materials Corporation of Japan.

Accordingly, withdrawal of these rejections is respectfully requested.

Conclusion

For the foregoing reasons, claims 1 and 3-6 are allowable, and the present application is in condition for allowance. Accordingly, favorable reexamination and reconsideration of the application in light of these amendments and remarks is courteously solicited. If the examiner has any comments or suggestions that would place this application in even better form, the Examiner is requested to telephone the undersigned attorney at the number below.

Dated: November 18, 2003

Respectfully submitted,

By 

David T. Nikaido

Registration No.: 22,663

Robert S. Green

Registration No.: 41,800

RADER, FISHMAN & GRAUER PLLC

1233 20th Street, N.W.

Suite 501

Washington, DC 20036

(202) 955-3750

Attorneys for Applicant

Should additional fees be necessary in connection with the filing of this paper, or if a petition for extension of time is required for timely acceptance of same, the Commissioner is hereby authorized to charge Deposit Account No. 180013 for any such fees; and applicant(s) hereby petition for any needed extension of time.

AMENDMENTS TO THE SPECIFICATION

Please amend the specification at the beginning at page 5, line 13 as follows:

Furthermore, among the lanthanide-gallate oxides, the lanthanide-gallate oxide is the most preferable, which is represented by $\text{Ln}_{1-a}\text{A}_a\text{Ga}_{1-(b+c)}\text{B}_b\text{Co}_c\text{O}_3$, wherein Ln is lanthanide rare earth metals, A is one or more kinds of Sr, Ca, and Ba; B is one or more kinds of Mg, Al, and In; a is in a range from 0.05 to 0.3; b is in a range from 0 to 0.3; c is in a range from 0 to 0.2; and (b+c) is in a range from 0.025 to 0.3. Among lanthanide gallates oxides, the lanthanum-gallate oxide is preferable. In particular, a compound represented by the following general formula (1) is the most preferable. $\text{La}_{1-a}\text{A}_a\text{Ga}_{1-(b+c)}\text{B}_b\text{Co}_c\text{O}_3$ (1), wherein A is one or more kinds of Sr, Ca, or Ba; B is one or more kinds of Mg, Al, and In; a is in a range from 0.05 to 0.3; b is in a range from 0 to 0.3; c is in a range from 0 to 0.2; and (b+c) is in a range from 0.025 to 0.3. Moreover, the amount of Co in the first electrolyte layer is preferably ~~0 or 80 % or less than 0%~~ $0 \leq \text{Co} \leq 80\%$ with respect to the amount of Co in the second electrolyte layer.

AMENDMENTS TO THE CLAIMS

Please amend claims 1.

1. (Currently Amended) A solid oxide fuel cell comprising an air electrode layer, a fuel electrode layer, and a solid electrolyte layer interposed between said air electrode layer and said fuel electrode layer, wherein

said solid electrolyte layer comprises a first electrolyte layer which is made of a lanthanide-gallate oxide and has a first ionic transference number and a first total electric conductivity, and a second electrolyte layer which is made of a lanthanide-gallate oxide and has a second ionic transference number smaller than said first ionic transference number and a second total electric conductivity larger than said first total electric conductivity;

said air electrode layer is laminated onto one side of said solid electrolyte layer;

said fuel electrode layer is laminated onto the other side of said solid electrolyte layer;

said first and second electrolyte layers are made of a compound represented by general formula (1): $\text{Ln}_{1-a}\text{A}_a\text{Ga}_{1-(b+c)}\text{B}_b\text{Co}_c\text{O}_3$, wherein Ln is lanthanide rare earth metals; wherein A is one or more kinds of Sr, Ca, and Ba; B is one or more kinds of Mg, Al, and In; a is in the range from 0.05 to 0.3; b is in the range from 0 to 0.3; c is in the range from 0 to 0.2; and (b+c) is in the range from 0.025 to 0.3;

an amount of Co in said first electrolyte layer is ~~0 or 80 % less than 0%~~ $\leq \text{Co} \leq 80\%$ with respect to an amount of Co in said second electrolyte layer; and

a thickness of said second electrolyte layer is larger than a thickness of said first electrolyte layer.

2. (Cancelled)

3. (Original) A solid oxide fuel cell according to Claim 1 wherein said lanthanide-gallate oxide is a lanthanum-gallate oxide.

4. (previously presented) A solid oxide fuel cell according to Claim 3 wherein:

said lanthanum-gallate oxide is a compound represented by general formula (1): $\text{La}_{1-a}\text{A}_a\text{Ga}_{1-(b+c)}\text{B}_b\text{Co}_c\text{O}_3$, wherein A is one or more kinds of Sr, Ca, and Ba; B is one or more kinds of Mg, Al, and In; a is in the range from 0.05 to 0.3; b is in the range from 0 to 0.3; c is in the range from 0 to 0.2; and (b+c) is in the range from 0.025 to 0.3; and

an amount of Co in said first electrolyte layer is 0 or 80 % less than an amount of Co in said second electrolyte layer.

5. (Original) A solid oxide fuel cell according to Claim 4, wherein

a thickness of said solid electrolyte layer comprising said first and second electrolyte layers is in a range from 1 to 500 μm ; and

a percentage of said thickness of said first electrolyte layer with respect to said thickness of said solid electrolyte layer is in a range from 1 to 20%.

6. (Original) A solid oxide fuel cell according to Claim 4, wherein said amount of Co decreases gradually from said second electrolyte layer to said first electrolyte layer in the vicinity of the interface between said first electrolyte layer and said second electrolyte layer.